

Atmospheric Analysis & Consulting, Inc.

CLIENT : SWAPE
PROJECT NAME : Bridgeton Sanitary Landfill Quality Assessment
AAC PROJECT NO. : 130502
REPORT DATE : 04/26/2013

On April 25, 2013, Atmospheric Analysis & Consulting, Inc. received four (4) Six-Liter Summa Canisters for Total Reduced Sulfur analysis by ASTM D-5504. Upon receipt, the samples were assigned unique Laboratory ID numbers as follows:

Client ID	Lab No.	Return Pressure (mmHgA)
U-1 W5N-Canister	130502-62624	579.3
U-1 W5S-Canister	130502-62625	521.3
D-1 W1-Canister	130502-62626	557.9
D-2 W2-Canister	130502-62627	762.0


ASTM D-5504 Analysis - Up to a 1 mL aliquot of sample is injected into the GC/SCD for analysis following ASTM D-5504 as specified in the SOW.

Sample 130502-62627 was received at the laboratory at ambient pressure. This may indicate a leak during sampling or the return shipment, therefore all results should be considered estimated.

No other problems were encountered during receiving, preparation, and/ or analysis of these samples. The test results included in this report meet all requirements of the NELAC Standards and/or AAC SOP# AACI- ASTM D-5504.

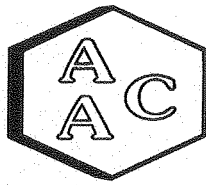
I certify that this data is technically accurate, complete, and in compliance with the terms and conditions of the contract. The Laboratory Director or his designee, as verified by the following signature, has authorized release of the data contained in this hardcopy data package.

If you have any questions or require further explanation of data results, please contact the undersigned.


Marcus Hueppe
Laboratory Director

This report consists of 27 pages.





CANISTER PRESSURE LOG

Client: Soil Water Air Protection Ent Project No.: 130502
Date: 4/25/2013

Canister #	Sample #	Initial Pressure	Final Pressure
734	62624	579.3	1025.2
730	62625	521.3	1023.4
723	62626	557.9	1026.3
669	62627	762.0	1020.5

AA# 130494 (62608-62611)

AA# 130502 (62624-62627)

CHAIN OF CUSTODY RECORD / ANALYTICAL REQUEST FORM

Bridgeton Sanitary Landfill Air Quality Assessment

Client Name: SOIL / WATER AIR PROTECTION ENTERPRISE
 Project Manager: PAUL ROSENFELD, PH.D.
 Address: 1640 FIFTH STREET, SUITE 204, SANTA MONICA, CA 90401
 Telephone No. / Fax No.: (310) 434-0110 / (310) 434-0011
 Date: April 23rd
 Page 1 of 1

BRIDGETON SANITARY LANDFILL AIR QUALITY ASSESSMENT
 Project Name and Location:
 Requested Tests / Analyses

Sampled By: John Blank
 Sampler Signature: *John Blank*
 Special Instructions / Conditions of Receipt

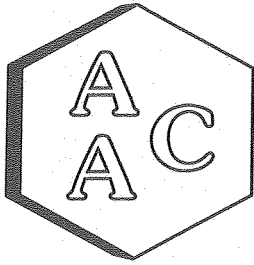
LAB ID	SAMPLE ID NUMBER	Type	Date	Time	VOCS - EPA TO-15	Reduced Sulfur Compounds - ASTM D5504	Carbonyls - EPA TO-11A	Carboxylic Acids - Tube GC-MS	HCL - NIOSH 7903	Ammonia - OSHA ID-188	SO2 - OSHA ID-200	HCN - NIOSH 6010	Amines - NIOSH 2010M	Fixed Gases - EPA 3C	PAHs / Dioxins EPA TO-13A / 9A	Mercury - NIOSH 6009	Odor Evaluation	
62608	U-1 W5N- DNPH	Tube	22-Apr	10:09									X					4363701292
62609	U-2 W5S- DNPH	Tube	22-Apr	10:25									X					4363701290
62610	D-1 W1- DNPH	Tube	22-Apr	10:47									X					4363701294
62611	D-2 W2- DNPH	Tube	22-Apr	11:34									X					4363701293
62624	U-1 W5N- Canister		22-Apr	4 Hr	X	X												Canister # 12977
62625	U-2 W5S- Canister		22-Apr	4 Hr	X	X												Canister # 16094
62626	D-1 W1- Canister		22-Apr	4 Hr	X	X												Canister # 13092
62627	D-2 W2- Canister		22-Apr	4 Hr	X	X												Canister # 4386

Requested Turnaround Time: Standard turn-around for all analyses. If possible deliver report within 2 weeks.
 QC Requirements: Provide Level IV QC Package for all Analyses.

Relinquished By: *John Blank* Date: Apr 23rd Time: 12:00 PM
 Relinquished By: *[Signature]* Date: Date: Time: Time:
 Relinquished By: *[Signature]* Date: Date: Time: Time:

Summa Cans Received: *[Signature]* 4/25/2013 1100
 - Fed Ex

Results



Atmospheric Analysis & Consulting, Inc.

LABORATORY ANALYSIS REPORT

CLIENT : SWAPE
 PROJECT NO. : 130502
 MATRIX : AIR
 UNITS : ppbV

SAMPLING DATE : 04/22/2013
 RECEIVING DATE : 04/25/2013
 ANALYSIS DATE : 04/25/2013
 REPORT DATE : 04/26/2013

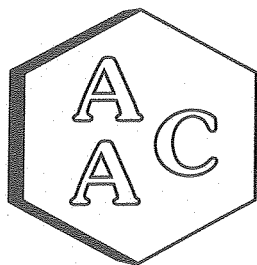
Sulfur Compounds by ASTM D-5504

Client ID	U-1 W5N-Canister	U-1 W5S-Canister	D-1 W1-Canister	D-2 W2-Canister
AAC ID	130502-62624	130502-62625	130502-62626	130502-62627
Canister Dil. Fac.	1.77	1.96	1.84	1.34
Analyte	Result	Result	Result	Result
Hydrogen Sulfide	< 44.2	< 49.1	< 46.0	< 33.5
Carbonyl Sulfide	< 44.2	< 49.1	< 46.0	< 33.5
Sulfur Dioxide	< 44.2	< 49.1	< 46.0	< 33.5
Methyl Mercaptan	< 44.2	< 49.1	< 46.0	< 33.5
Ethyl Mercaptan	< 44.2	< 49.1	< 46.0	< 33.5
Dimethyl Sulfide	< 44.2	< 49.1	< 46.0	< 33.5
Carbon Disulfide	< 22.1	< 24.5	< 23.0	< 16.7
Isopropyl Mercaptan	< 44.2	< 49.1	< 46.0	< 33.5
tert-Butyl Mercaptan	< 44.2	< 49.1	< 46.0	< 33.5
n-Propyl Mercaptan	< 44.2	< 49.1	< 46.0	< 33.5
Methylethylsulfide	< 44.2	< 49.1	< 46.0	< 33.5
sec-Butyl Mercaptan	< 44.2	< 49.1	< 46.0	< 33.5
Thiophene	< 44.2	< 49.1	< 46.0	< 33.5
iso-Butyl Mercaptan	< 44.2	< 49.1	< 46.0	< 33.5
Diethyl Sulfide	< 44.2	< 49.1	< 46.0	< 33.5
n-Butyl Mercaptan	< 44.2	< 49.1	< 46.0	< 33.5
Dimethyl Disulfide	< 22.1	< 24.5	< 23.0	< 16.7
2-Methylthiophene	< 44.2	< 49.1	< 46.0	< 33.5
3-Methylthiophene	< 44.2	< 49.1	< 46.0	< 33.5
Tetrahydrothiophene	< 44.2	< 49.1	< 46.0	< 33.5
Bromothiophene	< 44.2	< 49.1	< 46.0	< 33.5
Thiophenol	< 44.2	< 49.1	< 46.0	< 33.5
Diethyl disulfide	< 22.1	< 24.5	< 23.0	< 16.7
Total Unidentified Sulfur	< 44.2	< 49.1	< 46.0	< 33.5

All unidentified sulfur compound's concentrations expressed in terms of μS
 Sample Reporting Limit (SRL) is equal to Reporting Limit x Canister Dil. Fac. x Analysis Dil. Fac.


 Marcus Hueppe
 Laboratory Director





Atmospheric Analysis & Consulting, Inc.

LABORATORY ANALYSIS REPORT


CLIENT : SWAPE
 PROJECT NO. : 130502
 MATRIX : AIR
 UNITS : ug/m³

SAMPLING DATE : 04/22/2013
 RECEIVING DATE : 04/25/2013
 ANALYSIS DATE : 04/25/2013
 REPORT DATE : 04/26/2013

Sulfur Compounds by ASTM D-5504

Client ID	U-1 W5N-Canister	U-1 W5S-Canister	D-1 W1-Canister	D-2 W2-Canister
AAC ID	130502-62624	130502-62625	130502-62626	130502-62627
Canister Dil. Fac.	1.77	1.96	1.84	1.34
Analyte	Result	Result	Result	Result
Hydrogen Sulfide	< 61.7	< 68.4	< 64.1	< 46.7
Carbonyl Sulfide	< 109	< 121	< 113	< 82.3
Sulfur Dioxide	< 116	< 129	< 121	< 87.7
Methyl Mercaptan	< 87.1	< 96.6	< 90.5	< 65.9
Ethyl Mercaptan	< 112	< 125	< 117	< 85.1
Dimethyl Sulfide	< 112	< 125	< 117	< 85.1
Carbon Disulfide	< 68.9	< 76.4	< 71.6	< 52.1
Isopropyl Mercaptan	< 138	< 153	< 143	< 104
tert-Butyl Mercaptan	< 163	< 181	< 170	< 123
n-Propyl Mercaptan	< 138	< 153	< 143	< 104
Methylethylsulfide	< 138	< 153	< 143	< 104
sec-Butyl Mercaptan	< 163	< 181	< 170	< 124
Thiophene	< 152	< 169	< 158	< 115
iso-Butyl Mercaptan	< 163	< 181	< 170	< 124
Diethyl Sulfide	< 163	< 181	< 170	< 123
n-Butyl Mercaptan	< 163	< 181	< 170	< 123
Dimethyl Disulfide	< 85.2	< 94.5	< 88.6	< 64.5
2-Methylthiophene	< 178	< 197	< 185	< 134
3-Methylthiophene	< 178	< 197	< 185	< 134
Tetrahydrothiophene	< 160	< 177	< 166	< 121
Bromothiophene	< 295	< 327	< 307	< 223
Thiophenol	< 199	< 221	< 207	< 151
Diethyl disulfide	< 111	< 123	< 115	< 83.7
Total Unidentified Sulfur	< 61.7	< 68.4	< 64.1	< 46.7

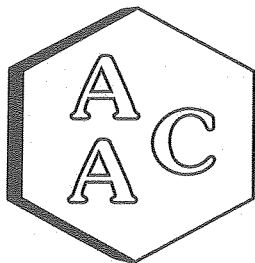
All unidentified sulfur compound's concentrations expressed in terms of μS
 Sample Reporting Limit (SRL) is equal to Reporting Limit x Canister Dil. Fac. x Analysis Dil. Fac.



 Marcus Hueppe
 Laboratory Director



QA/QC Summary



Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report ASTM D-5504

Date Analyzed: 04/25/13

Analyst: DH

Instrument ID: SCD#10

Calb. Date: 4/23/2013

Opening Calibration Verification Standard

	Resp. (area)	Result (ppbV)	% Rec *	% RPD ****
Initial	6694	498	99.6	NA
Duplicate	6660	495	99.1	0.5
Triplicate	6624	493	98.6	1.1

Method Blank

Analyte	Result
H2S	ND

Matrix Spike & Duplicate

Sample ID 130501-62623 x10

Analyte	Sample Conc.	Spike Added	MS Result	MSD Result	MS % Rec **	MSD % Rec **	% RPD ***
H2S	0	250	247	251	98.8	100.2	1.4

Duplicate Analysis

Sample ID 130501-62623 x10

Analyte	Sample Result	Duplicate Result	Mean	% RPD ***
H2S	0	0	0	0.0

Closing Calibration Verification Standard

Analyte	Std. Conc.	Result	%Recovery **
H2S	500	470.4	94.1

* Must be 95-105%

** Must be 90-110%

*** Must be < 10%

**** must be < 5% RPD from Initial result.

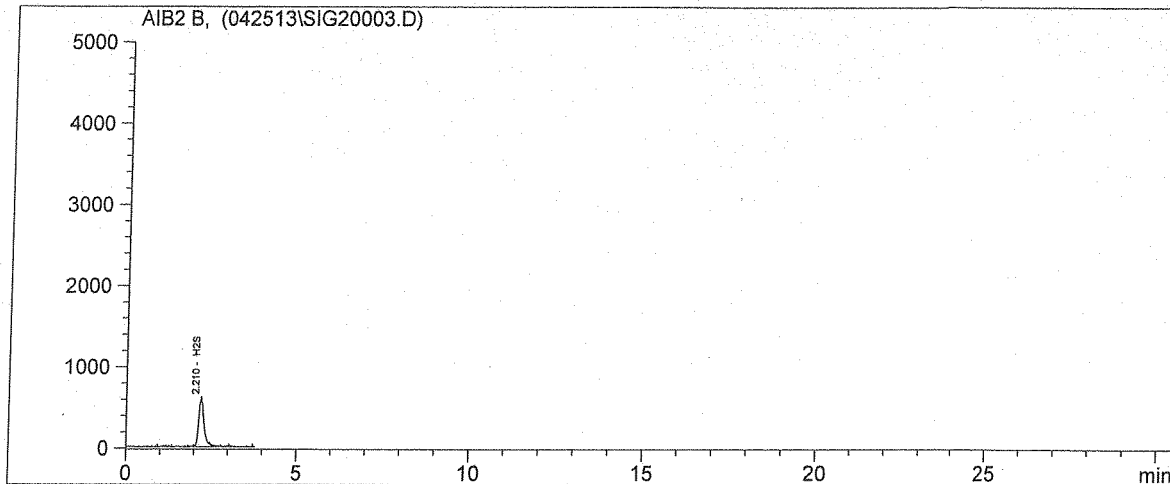
Marcus Hueppe
Laboratory Director



Raw Data

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 Customized Report: D5504

Injection Date : 4/25/2013 7:15:39 AM Seq. Line : 3
 Sample Name : CCV 500ppbV SS0677 dp ->Inj. Vol. : Manually
 Multiplier : 1.00
 Dilution : 1.00
 Acq Operator : DH
 Acq. Instrument : GC/SCD #10
 Acq. Method : ASTM5504.M
 Analysis Method : C:\HPCHEM\1\METHODS\D042313.M



Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
2.210	6660	495.483	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

Totals: 495.483

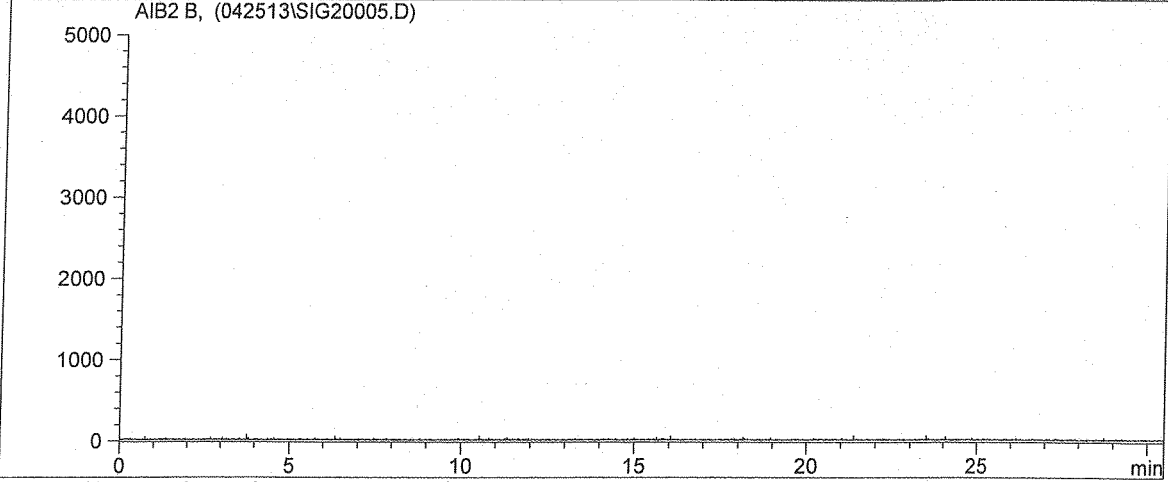
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 *** End of Report ***

Handwritten signature/initials

Customized Report: D5504

Injection Date : 4/25/2013 7:27:21 AM
Sample Name : Method Blank
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DH
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D042313.M

Seq. Line : 5
Inj. Vol. : Manually



Uncalibrated Peaks : using compound H2S

Table with 4 columns: Ret Time [min], Area, Amount [ppbV], and Name. It lists 20 different sulfur compounds with all values set to 0.000.

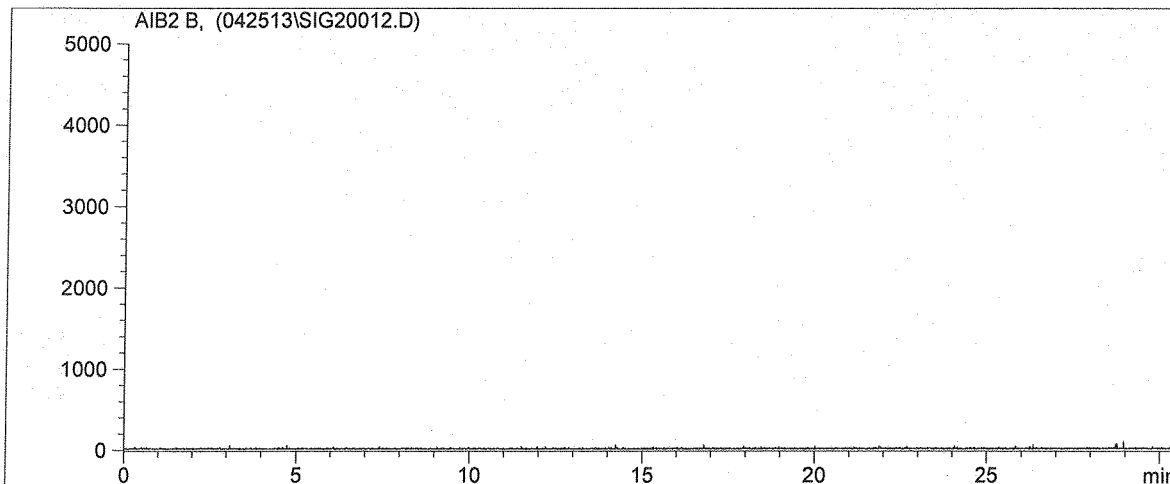
Totals: 0.000

*** End of Report ***

Handwritten signature and date: 4/25/13

Customized Report: D5504

Injection Date : 4/25/2013 1:57:06 PM Seq. Line : 12
 Sample Name : 130502-62625 Inj. Vol. : Manually
 Multiplier : 1.00
 Dilution : 1.00
 Acq Operator : DH
 Acq. Instrument : GC/SCD #10
 Acq. Method : ASTM5504.M
 Analysis Method : C:\HPCHEM\1\METHODS\D042313.M



Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

Totals: 0.000

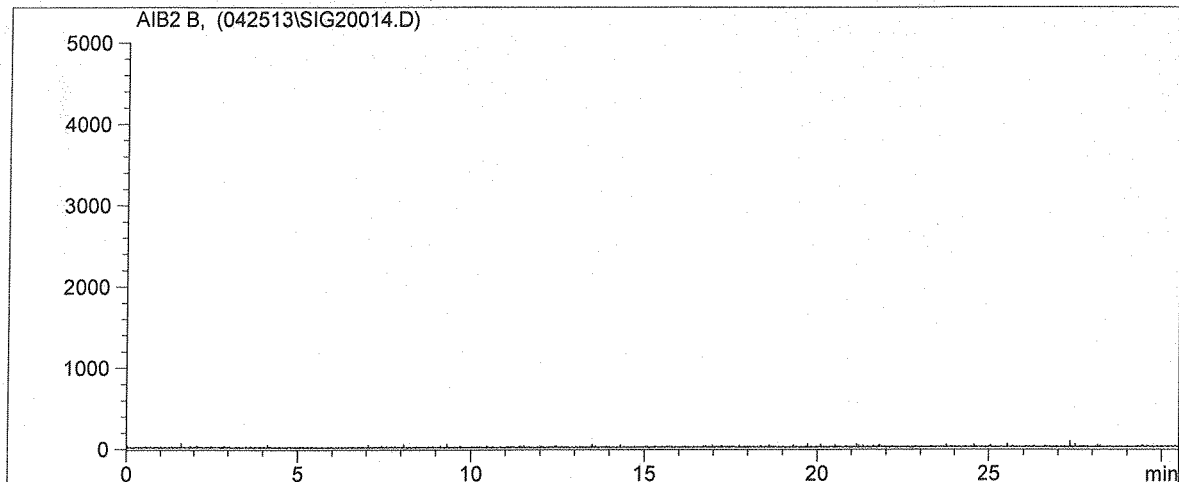
*** End of Report ***

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DA 4/25/13

Customized Report: D5504

Injection Date : 4/25/2013 3:06:14 PM Seq. Line : 14
 Sample Name : 130502-62627 Inj. Vol. : Manually
 Multiplier : 1.00
 Dilution : 1.00
 Acq Operator : DH
 Acq. Instrument : GC/SCD #10
 Acq. Method : ASTM5504.M
 Analysis Method : C:\HPCHEM\1\METHODS\D042313.M



Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

Totals: 0.000

*** End of Report ***

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Sequence Table (Front Injector):

No entries - empty table!

Sequence Table (Back Injector):

Method and Injection Info Part:

Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 1	System Blank	ASTM5504	1	Sample		
2	Vial 2	CCV 500ppbV	ASTM5504	1	Sample		
3	Vial 3	CCV 500ppbV	ASTM5504	1	Sample		
4	Vial 4	CCV 500ppbV	ASTM5504	1	Sample		
5	Vial 5	Method Blank	ASTM5504	1	Sample		
6	Vial 6	130501-62623 x10	ASTM5504	1	Sample		
7	Vial 7	130501-62623 x10	ASTM5504	1	Sample		
8	Vial 8	MS 62623	ASTM5504	1	Sample		
9	Vial 9	MSD 62623	ASTM5504	1	Sample		
10	Vial 10	CCV 500ppbV	ASTM5504	1	Sample		
11	Vial 11	130502-62624	ASTM5504	1	Sample		
12	Vial 12	130502-62625	ASTM5504	1	Sample		
13	Vial 13	130502-62626	ASTM5504	1	Sample		
14	Vial 14	130502-62627	ASTM5504	1	Sample		
15	Vial 15	130502-62627	ASTM5504	1	Sample		
16	Vial 16	CCV 500ppbV	ASTM5504	1	Sample		

Calibration Summary

Analysis Date: 4/23/2013

Analyst: DH

Units: ppbv

SCAQMD 307.91 / ASTM D-5504 INITIAL CALIBRATION SUMMARY

CALIBRATION CURVE RAW DATA:

Standard Concentration (ppbv)	Retention time (min)	Response (Area)	RPD from initial result (< 5%)	Std Deviation	Standard Concentration	Mean Response (Area)	Calculated Concentration (From Mean)	Mean % Recovery (+/- 5%)
0.0	0.00	0	0.0	0	0.0	0	0.0	0.0
0.0	0.00	0	0.0	0	0.0	0	0.0	0.0
25.0	2.207	330	0.0					
25.0	2.263	326	1.2	2	25.0	329	24.4	97.8
25.0	2.249	330	0.0					
100.0	2.201	1337						
100.0	2.209	1295	3.2	26	100.0	1307	97.2	97.2
100.0	2.192	1289	3.7					
500.0	2.195	6397						
500.0	2.211	6508	1.7	61	500.0	6437	478.9	95.8
500.0	2.203	6407	0.2					
2500.0	2.204	34198						
2500.0	2.208	33495	2.1	472	2500.0	33664	2504.3	100.2
2500.0	2.202	33500	2.7					

Avg. Ret. 2.212

Calibration Verification Check Standards:

Check Standard Concentration: 500 ppbv

	Resp. (area)	Result (ppbv)	% Rec *	% RPD
Initial	6966	518.2	103.6	NA
Duplicate	6946	516.7	103.3	0.3
Triplicate	6695	498.1	99.6	4.0

* All CV's must have +/- 5% Recovery and < 5% RPD from initial result.

Linear Slope:

$X = Y/$

13.4424

R2 value:

0.9999

Must be > 0.990

Laboratory Director (signature/date)

 4/23/13

SCAQMD 307.91/ASTM D-5504 INITIAL CALIBRATION SUMMARY

Area (mean) vs. Conc. (theor)

